

## Claims:

1. An apparatus for delivering an intravascular drug, said apparatus comprising:

a) a first catheter tube having a proximal end, a distal end, and a fluid lumen extending from its proximal end to its distal end;

b) an inflatable balloon coupled to said distal end of said first catheter and in fluid communication with said fluid lumen;

c) a second catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end, said first catheter tube extending through said lumen of said second catheter tube;

d) a self-expanding balloon coupled to said distal end of said second catheter tube, said first catheter tube extending through said self-expanding balloon; and

e) a third catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end, said second catheter tube extending through said lumen of said third catheter tube, wherein

at least one of said second catheter tube and said third catheter tube is adapted to receive and deliver the intravascular drug to the location of said self-expanding balloon.

2. An apparatus according to claim 1, wherein:

said first catheter tube has a guide wire lumen extending from its proximal end to its distal end.

3. An apparatus according to claim 1, wherein:

said second catheter tube is adapted to receive and deliver the intravascular drug, and

said self-expanding balloon includes a plurality of fluid pores, said fluid pores being in fluid communication with said lumen of said second catheter tube.

4. An apparatus according to claim 1, wherein:

said second catheter tube is adapted to receive and deliver the intravascular drug, and

said distal end of said lumen of said second catheter tube has a plurality of fluid pores.

5. An apparatus according to claim 1, wherein:

said third catheter tube is adapted to receive and deliver the intravascular drug.

6. An apparatus according to claim 1, wherein:

said third catheter tube has a proximal locking means for locking the location of said second catheter tube relative to said third catheter tube.

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said first catheter tube is adapted to receive the intravascular drug by having a proximal port in fluid communication with said fluid lumen of said first catheter tube.

said second catheter tube is adapted to receive the intravascular drug by having a proximal port at said proximal end of said second catheter tube in fluid communication with said fluid lumen of said second catheter tube.

f) a fourth catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end, said third catheter tube extending through said lumen of said fourth catheter tube; and

g) a second inflatable balloon coupled to the distal end of said fourth catheter.

f) a drug dispenser having a drug reservoir and a drug outlet, said drug outlet being fluidly coupled to said fluid delivery means, said drug dispenser being adapted to automatically dispense the drug from the reservoir into the fluid delivery means as said second catheter tube is moved through a blood vessel.

11. An apparatus according to claim 10, wherein:  
     said drug reservoir is a syringe having a plunger, and  
     said drug dispenser includes means for moving said plunger as  
     said second catheter tube is moved through a blood vessel.
  
12. An apparatus according to claim 11, wherein:  
     said means for moving said plunger includes a gear coupled to  
     said plunger, a spool coupled to said gear, and a filament,  
     ribbon, or cable coupled to said spool.
  
13. An apparatus according to claim 10, wherein:  
     said drug dispenser includes means for coupling said drug  
     reservoir to a patient's limb.
  
14. An apparatus according to claim 10, wherein:  
     said drug dispenser includes means for coupling said drug  
     reservoir to one of said catheter tubes.

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15. An apparatus for delivering an intravascular drug, said apparatus comprising:

- a) a catheter having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end;
- b) a drug reservoir having a drug outlet, said drug outlet being fluidly coupled to the proximal end of the lumen of the catheter,
- c) dispensing means coupled to said drug reservoir, said dispensing means being adapted to automatically dispense the drug from the reservoir into the lumen of the catheter as the catheter is moved through a blood vessel.

16. An apparatus according to claim 15, wherein:

- said drug reservoir is a syringe having a plunger, and
- said dispensing means includes means for moving said plunger as said catheter is moved through a blood vessel.

17. An apparatus according to claim 16, wherein:

- said means for moving said plunger includes a gear coupled to said plunger, a spool coupled to said gear, and a filament or cable coupled to said spool.

18. An apparatus according to claim 15, further comprising:

- d) attachment means for attaching said drug reservoir to a patient's limb.

19. An apparatus according to claim 15, further comprising:

d) attachment means for attaching said drug reservoir to said catheter.

20. An apparatus for delivering an intravascular drug, said apparatus comprising:

a) a first catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end;

b) a self-expanding balloon coupled to said distal end of said first catheter tube; and

c) a second catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end, said first catheter tube extending through said lumen of said second catheter tube, wherein

at least one of said first catheter tube and said self-expanding balloon includes pores, and said first catheter tube is adapted to receive and deliver the intravascular drug to said pores.

21. An apparatus according to claim 20, wherein:

said self-expanding balloon is comprised of spring wires and a thin membrane coupled to said spring wires.

22. An apparatus according to claim 20, wherein:

said self-expanding balloon includes an abrasive outer surface.

23. An apparatus according to claim 20, wherein:

said self-expanding balloon is made of plastic.

24. An intravascular apparatus, comprising:

- a) a first catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end;
- b) a self-expanding balloon coupled to said distal end of said second catheter tube and having an abrasive outer surface; and
- c) a second catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end, said first catheter tube extending through said lumen of said second catheter tube.

25. An intravascular apparatus according to claim 24, wherein:

at least one of said first catheter tube and said self-expanding balloon includes pores, and said first catheter tube is adapted to receive and deliver an intravascular drug to said pores.

26. A method for treating a varicose vein, comprising:

- a) delivering a first catheter having a balloon coupled at a distal end thereof through an incision and up the varicose vein;
- b) expanding the balloon; and
- c) dispensing a sclerosing agent adjacent the balloon.

27. A method according to claim 26, further comprising:

- d) partially removing the catheter from the varicose vein via the incision with the balloon expanded while continuing said dispensing of said sclerosing agent.

28. A method according to claim 26, further comprising:

- providing a second catheter over said first catheter and over said balloon, wherein

said balloon is a self-expanding balloon, and said expanding comprises withdrawing said second catheter from over said self-expanding balloon.

29. A method according to claim 28, wherein:

said dispensing comprises dispensing said sclerosing agent via said second catheter.



30. A method of delivering an intravascular drug to a blood vessel, said method comprising:

- a) delivering a first catheter via an incision to a first location in the blood vessel;
- b) dispensing the intravascular drug through the first catheter while moving the first catheter from the first location to a second location as the first catheter is at least partially pulled out of the incision; and
- c) removing the first catheter from the blood vessel.

31. A method according to claim 30, wherein:

said delivering a first catheter to a first location includes delivering said first catheter and a second catheter having a balloon at a distal end thereof to the first location, said second catheter extending through said first catheter, and inflating the balloon.

32. A method according to claim 30, wherein:

said first catheter has a self-expanding balloon coupled to a distal end thereof, and

said dispensing includes dispensing the drug adjacent the self-expanding balloon.

33. A method according to claim 32, wherein:

at least one of said catheter and said self-expanding balloon include pores, and said dispensing includes dispensing the drug through said pores.

34. A method according to claim 32, wherein:

said delivering a first catheter to a first location includes delivering said first catheter and a second catheter to said first location, said second catheter extending over said first catheter and said self-expanding balloon, said method further comprising withdrawing said second catheter from over said self-expanding balloon, wherein

said dispensing includes dispensing the drug through said second catheter.

35. A method of delivering an intravascular drug to a blood vessel, said method comprising:

- a) delivering a catheter system via an incision to a first location in the blood vessel, said catheter system having first, second, and third catheter tubes with first, second, and third balloons coupled to respective distal ends thereof, said second balloon being a self-expanding balloon, said third catheter tube extending through said second catheter tube, and said second catheter tube extending through said first catheter tube;
- b) inflating said third balloon at said first location;
- c) causing said self-expanding balloon to expand;
- d) inflating said first balloon at a second location;
- e) dispensing the drug through the second catheter tube; and
- f) moving said second catheter with said second balloon so that said second balloon moves between said first location and said second location.

36. A kit for the intravascular treatment of a blood vessel, said kit comprising:

a) a catheter having an expandable balloon at its distal end and a drug delivery lumen; and

b) a drug dispenser having a drug reservoir fluidly coupled to said drug delivery lumen, wherein

said drug dispenser includes means for automatically dispensing a drug from said drug reservoir into said drug delivery lumen in response to movement of said catheter through the blood vessel.

37. A kit according to claim 36, wherein:

said drug reservoir includes a syringe having a plunger and said means for automatically dispensing includes means for depressing said plunger.

38. An apparatus for delivering an intravascular drug, said apparatus comprising:

a) a first catheter tube having a proximal end, a distal end, and a first lumen extending from its proximal end to its distal end;

b) a first inflatable balloon coupled to said distal end of said first catheter and in fluid communication with said first lumen;

c) a second catheter tube having a proximal end, a distal end, and a second lumen extending from its proximal end to its distal end, said first catheter tube extending through said second lumen;

d) a second inflatable balloon coupled to said distal end of said second catheter tube and in fluid communication with said second lumen; and

e) a third catheter tube having a proximal end, a distal end, and a third lumen extending from its proximal end to its distal end, said second catheter tube extending through said third lumen, wherein

said third lumen is adapted to receive and deliver the intravascular drug to the location of said second inflatable balloon.

39. An apparatus for delivering an intravascular drug, said apparatus comprising:

a) a first catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end; and

b) a brush having a plurality of hollow bristles coupled to said distal end of said first catheter tube and being in fluid communication with said lumen, wherein

said first catheter tube includes means for injecting a vascular drug into said lumen such that the drug exits through said hollow bristles of said brush.

40. An apparatus according to claim 39, further comprising:

c) a second catheter tube having a proximal end, a distal end, and a lumen extending from its proximal end to its distal end, said first catheter tube extending through said lumen of said second catheter tube.